CLAIMS

1. A method of drilling holes in lenses for making "rimless and pierced-lens" spectacles by means of a numerically-controlled drill (12) having a tool support (13.3) that is mounted to move in translation in three co-ordinate directions X, Y, Z, the associated drill tool (15) being drivable in rotation about and movable in translation along its axis (16) which is parallel to one (Z) of said directions, said method being characterized in that it comprises the following successive steps:

a) positioning a lens (V) by moving it in a plane substantially perpendicular to the axis (16) of the drill tool, relative to a reference pointer (30, 33) of position in said plane that is known to the numerically-controlled drill (12), until a pre-marked reference point (PR) on an edge of the lens (V) is brought into abutment against the reference pointer (30, 33), whereupon said lens is held stationary in that position;

b) then bringing the drill tool (15) towards the lens (V) which continues to be held stationary, and retracting the reference pointer (30, 33) in order to leave clear the abutment zone of the lens; and

c) controlling the drill tool (15) so as to perform the pre-programmed machining sequences, by using the position of the reference point (PR) of the lens (V) as a zero point for said sequences.

2. A method according to claim 1, characterized in that, during the step a), the right and the left lenses (VD, VG) of the spectacles to be made are placed side-by-side, each lens having a reference point (PR) which is brought into abutment against an associated reference pointer (30, 33), whereupon each lens (VD, VG) is held stationary in its respective position, each reference pointer (30, 33) then being retracted during step b) for the respective pre-programmed sequences.

3. A method according to claim 2, characterized in that the reference pointers (30, 33) are part of a common retractable piece (32) on either side of which the right and the left lenses (VD, VG) are brought to enable the holes in the nose zones (ZN) or in the temple zones (ZT) of both lenses to be formed symmetrically.

4. A method according to claim 3, characterized in that, after completion of the pre-programmed machining sequences on the nose zones (ZN) or on the temple zones (ZT) of both lenses (VD, VG), the positions are swapped over in another step a) in order then to perform the sequences on the other zones.

5. A method according to any one of claims 1 to 4, characterized in that, during step a), the or each lens is moved and then held stationary on a surface (41) that is laterally tilted with a small angle of inclination so that the drill tool (15) meets the lens in question perpendicularly to the face in question of said lens.

6. A method according to any one of claims 2 to 4, and claim 5, characterized in that two juxtaposed sloping surfaces (41) are provided, of inclinations that are adjusted symmetrically for the right lens (VD) and for the left lens (VG).

7. A method according to any one of claims 1 to 6, characterized in that, during step b), the reference pointer(s) (30, 33) is/are retracted automatically or manually, in a direction parallel to the vertical direction (Z).

8. A method according to any one of claims 1 to 7, characterized in that, during step c), the machining sequences are taken from a memory in which a plurality of sequences have been input, each of which includes a

plurality of through or non-through holes and/or notches, arranged in a predetermined pattern (M1 to M6).

9. Apparatus for implementing the drilling method according to any one of claims 1 to 6, said apparatus being characterized in that it comprises:

a substantially horizontal bed (11) carrying a numerically-controlled drill (12) having an overlying tool support (13.3) that is movable in translation in three co-ordinate directions X, Y, Z and having a drill tool (15) that is drivable in rotation about and is movable in translation along its own axis (16) which remains substantially vertical;

a reference pointer (30, 33) mounted on the bed (11) to be movable between an active position in which it bears against a lens and a retracted position in which it leaves the lens clear; and

a lens support (50) arranged to hold the lens (V) in a substantially horizontal plane, said support resting on a surface (20, 41) that is secured to or integral with the above-mentioned bed (11) while the position of said support can be held stationary relative to said surface.

10. Apparatus according to claim 9, characterized in that the reference pointer (30) comprises a vertical column (31) fixed to the bed (11) and a slide (32) mounted to move on said column between an active high position and a retracted low position, said slide having at least one side edge (33) serving as an abutment for the edge of the lens in question at a reference point (PR) thereon.

11. Apparatus according to claim 10, characterized in that the slide (32) of the reference pointer (30) has an abutment side edge (33) on either said of the axis of the support column (31), and two lens supports (50) are provided in order to put in place the right and left lenses (VD, VG), one next to the other.

12. Apparatus according to claim 10 or claim 11, characterized in that the abutment side edge (33) provided on one side or on each side of the slide (32) is a vertically extending rib.

13. Apparatus according to any one of claims 10 to 12, characterized in that the slide (32) is held in the high position on the vertical column (31) by mechanical or electromagnetic means.

14. Apparatus according to any one of claims 10 to 13, characterized in that the slide (32) is caused to move downwards over its vertical column (31) by mechanical, electrical, or electromagnetic means associated with the drill tool (15) moving downwards.

15. Apparatus according to any one of claims 9 to 14, characterized in that the bed (11) underlies two support plates (41) forming a V-shape, and whose upward or downward inclination is adjustable symmetrically by associated common adjustment means (45).

16. Apparatus according to any one of claims 9 to 15, characterized in that the lens support (50) comprises a block (51) having declutchable magnetic locking, that can be held stationary in any position on the surface (20) or on the inclined plates (41) overlying the bed (11), the top face of said block being made of a ferromagnetic material, and said block underlying means (55) for holding a lens (V) in a substantially horizontal plane.

17. Apparatus according to any one of claims 9 to 16, characterized in that the lens support (50) is secured to the bed (11) so as to move in two orthogonal directions corresponding to the co-ordinate directions X and Y.